

Remarks / Arguments

Claims 18-27 are pending. Claims 18-27 have been rejected under 35 U.S.C. §112, first paragraph, and under 35 U.S.C. §103(a). Claim 18 has been amended.

Rejection under 35 U.S.C. §112, first paragraph

Claims 18-27 have been rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way to reasonably convey that the inventor has possession of the claimed invention.

As suggested by the Examiner, Applicants inadvertently restored the original language of claim 18, step(f), as it was presented in the preliminary amendment. Applicants wish to thank the Examiner for this suggestion. As such, Applicants have amended claim 18, again as suggested by the Examiner, by amending step (f) to state “repeating steps (d) and (e) to produce a film”, as was done in amendment B (Paper No. 5, filed 11/18/2002).

Accordingly, for this reason, reconsideration, and withdrawal of the rejection, of claims 18-27 under 35 U.S.C. §112, first paragraph, is respectfully requested.

Rejection under 35 U.S.C. §103(a)

Claims 18-27 have been rejected under 35 U.S.C. §103(a) as being obvious over Fratello et al. ('091) in view of Harmer et al. ('622) and Forster et al. ('961).

The Examiner states that '091 teaches a method of preparing a multilayer phosphor product of terbium-activated yttrium orthosilicate on a substrate and the Examiner states the steps. Then the Examiner states that '091 does not teach the silicon precursor is a solid particle with an average particle size of about 7 nm and that '091 teaches that the purpose of the alkoxide precursors is to form a continuous metal cation-oxygen network. Tetraethyl orthosilicate is a preferred precursor of such networks. The Examiner also states that '622

teaches a variety of operative silicon-containing precursors for forming metal oxide networks, including TEOS and fumed silica. The Examiner concludes that it would have been obvious to have used fumed silica as the particular silicon precursor of '091 because '622 teaches that fumed silica is operative as a sol-gel precursor for the formation of metal oxide networks.

Applicants would like to point out that the '091 reference was neither cited in the Notice of References Cited nor supplied with the Office Action. Furthermore, as stated by the Examiner, '091 does not teach that the silicon precursor is a solid particle with an average particle size of about 7 nm. The Examiner states that '091 teaches that the purpose of the precursors is to form a continuous metal cation-oxygen network. However, Applicants note that the language of the patent, as cited by the Examiner, states that "[I]t is believed that in this initial phase of the preparation procedure hydrolysis and polymerization leads to the formation of a continuous cation-oxygen network much as is found in high silica glasses." The statement "[I]t is believed" is merely a statement of belief, not rising to the level of a teaching. Furthermore, it is merely a belief that this initial phase leads to the formation of the network. This is in contrast to the Examiner's statement that the patent "teaches that the purpose of the alkoxide precursors is to form a continuous [metal] cation-oxygen network." The Examiner's citation does not discuss alkoxide precursors per se and instead of referencing a "metal" network, the citation references the network "much as is found in high silica glasses."

Applicants respectfully submit that the '091 patent relates to only starting liquid precursors and does not involve any starting solid particle precursor. The '091 patent does *not* discuss a solid/liquid sol-gel reaction mixture nor does it discuss a sol-gel reaction mixture to form a multilayer phosphor film, as described by the present application. In other words, Applicants respectfully submit that the reference cited is non-analogous to the present

invention.

The '622 patent relates to a network of metal oxide and silica. The '622 patent does *not* discuss a solid/liquid sol-gel reaction mixture nor does it discuss a sol-gel reaction mixture to form a multilayer phosphor film, as described by the present application.

Therefore, Applicants respectfully submit that the reference cited is non-analogous to the present invention.

The '961 patent relates to a mixture of solid particles. The '961 patent does *not* discuss a solid/liquid sol-gel reaction mixture nor does it discuss a sol-gel reaction mixture to form a multilayer phosphor film, as described by the present application. Again, Applicants respectfully submit that the reference cited is non-analogous to the present invention.

Applicants' starting materials are a liquid (or dissolved) alkoxide precursor, a liquid (or dissolved) dopant precursor, and a *solid* particle precursor. The liquid precursors are then reacted to form a sol-gel condensation reaction mixture that leads to a metallo-alkoxide lattice which surrounds and coats the solid particle precursor. In the present application, the encased silica particles react in a solid reaction with the metallo-alkoxide lattice to form the silicate phosphor material. The present invention concerns only phosphors, as phosphors are the products obtained from reacting the starting materials of the present application

Therefore, Applicants respectfully suggest that the obviousness rejection fails.

At most, this may make it "obvious to try", however, it has long been held that "obvious to try" is not the standard under 35 U.S.C. 103(a). (Ex parte Argabright, 1512 U.S.P.Q. 703, Bd. Of Appls. 1967; In re Goodwin, 576 F.2d 375, 198 U.S.P.Q. 1 (C.C.P.A. 1978)) Applicants respectfully submit that patentability considerations based on "obvious to try" logic are contrary to 35 U.S.C. 103. (In re Tomlinson, 363 F.2d 928, 150 U.S.P.Q. 623 (C.C.P.A. 1966)) Moreover, there is no cited reference in the prior art of record to show or

even suggest the modification necessary to achieve the presently-claimed invention and hence, there is no basis for the Examiner's apparent assertion that said substitution would be *prima facie* obvious. (In re Grabiak, 769 F.2d 729, 226 U.S.P.Q. 1125 (Fed. Cir. 1985))

The Examiner cites the Abstract and claim 1 of '961 for support of the diameter of the fumed silica. The patent "relates to the fluorescent lamp phosphors, and particularly relates to a method of preparing a ...phosphor," without mentioning using the phosphor as a precursor. This is in contrast to the Examiner's statement that the patent "teaches the formation of phosphor for precursors." Additionally, the Examiner states that the patent teaches average particle sizes of less than 50 nm. The Examiner concludes that it would have been obvious to have used average particle sizes of less than 50 nm for the fumed silica of '091 and '622 because '961 teaches the operability of such particle sizes as the particle size of fumed silica when used as a phosphor precursor. Applicants respectfully submit this conclusion is without basis as the '961 patent relates to a method of preparing phosphors and not the use of phosphors as precursors.

Furthermore, Applicants respectfully submit that a statement of "less than 50 nm" is not a teaching of using a particle size of 7 nm. The patent itself limits the range to "10-50 nm" during the description of the exemplary embodiment (col. 2, line 55).

Thus, the Examiner has not made out a case of *prima facie* obviousness, since one of the elements of the claims is neither taught nor suggested by either of the cited references. It is well-established that

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.

M.P.E.P. § 2143, *citation omitted*.

Applicants respectfully submit, for the reasons as stated, that there does not exist a suggestion or motivation to combine the three references of '622, '091, and '961 such that one would arrive at the present invention.

Applicants also respectfully submit that the mere fact the prior art could be so modified would not have made the modifications obvious unless the prior art suggested the desirability of the modification. (In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984)) There must have been, at the time of the invention, a reasonable expectation of success. This was not the case with the present invention. The prior art references do not supply the teaching necessary to insure the success of the combination as stated by the Examiner. The invention that was made does not make itself obvious; that suggestion or teaching must come from the prior art. (C.R. Bard Inc. v. M3 Systems Inc., 48 U.S.P.Q. 2d 1225, 1232)

Applicants respectfully submit that focusing on individual elements of the claimed invention, rather than on the invention as a whole, is not the proper test under 35 U.S.C. 103. (In re McLaughlin, 443 F.2d 1392, 1395, 170 U.S.P.Q. 209, 212 (1971); Connell v. Sears, Roebuck & Co., 772 F.2d 1542, 1549, 220 U.S.P.Q. 193, 199 (Fed. Cir. 1983)) Therefore the Examiner's statement that it "would have been obvious...to have used average particle sizes of less than 50 nm for the fumed silica of '091 and '622 because '961 teaches the operability of such particle sizes as the particle size of fumed silica when use as a phosphor precursor" does not afford the Applicants the proper test nor the proper application and analysis of the test under 35 U.S.C. 103.

Applicants respectfully submit that the rejection to claim 18 has been traversed and this traversal applies to claims 19-27 since these claims depend from claim 18.

Thus, the rejection under 35 U.S.C. §103(a) should be withdrawn for these reasons.

Conclusion

In conclusion, Applicants respectfully submit that the Examiner's Office Action has been fully responded to and that the claims are in condition for allowance. A favorable action at the Examiner's earliest convenience is earnestly solicited.

No issue of new matter or lack of adequate written description should arise as a result of the entry of the above amendment.


In the furtherance of compact prosecution, if a personal or telephone interview would help expedite matters, the Examiner is requested to contact Steve Hunnius at 202-404-1558.

Kindly charge any additional fees due, or credit overpayment of fees, to Deposit Account No. 50-0281.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Prepared by:
Stephen T. Hunnius
Reg. No. 48,304
Naval Research Laboratory, Code 1008.2
4555 Overlook Ave., S.W.
Washington, DC 20375
(202) 404-1558

Respectfully submitted,


John J. Karasek
Associate Counsel
Reg. No. 36,182
Naval Research Laboratory, Code 1008.2
4555 Overlook Ave., S.W.
Washington, DC 20375
202-767-3427